

IN THE CLAIMS

1. (Currently Amended) A protection system comprising:

~~(i)~~ a plurality of Processing Modules arranged in ~~series~~ comprising series, the plurality of Processing Modules including at least one Protection Processing Module and at least two Working Processing Modules ~~including a protected Working Processing Module;~~

~~(ii)~~ wherein each Processing Module includes a signal path operable to provide a signal output, the signal path including: comprising

a Normal Path that is connected to the protected Working Processing Module operable to provide a first signal output, and

a Failure Path that is connected to a to a Normal Path of an adjacent Working Processing Module, the Failure Path operable to provide a second signal output over the Normal Path of the adjacent Working Processing Module in response to a failure in the adjacent Working Processing module that is logically adjacent to the protected Working Processing Module; and

~~(iii)~~ a Protection Bus for connecting the Protection Processing Module through any intermediate Working Processing Modules to the Working Processing Module logically adjacent to the protected a failed Working Processing Module, the Protection Processing Module operable to provide the second signal output over the Protection Bus for the Normal Path of the failed Working Processing Module.

2. (Currently Amended) The protection system of claim 1, wherein the Protection Bus ~~comprises~~ includes a plurality of Protection Bus Segments, each Protection Bus Segment associated with at least one Working Processing Module.

3. (Currently Amended) The protection system of claim 1, wherein, upon failure of ~~the protected Working~~ a Working Processing Module, a connection is formed from the Protection Processing Module to the Failure Path of a Working Processing Module adjacent to the failed Working Processing Module.

4. (Currently Amended) The protection system of claim 3, wherein the ~~protected~~ failed Working Processing Module is not adjacent to the Protection Processing Module.

5. (Currently Amended) The protection system of claim 2, further comprising, for each of  $i = 1$  to  $n$  Working Processing Modules,

an  $i$ th signal path ~~comprising~~ including an  $i$ th Normal Path that is connected to the  $i$ th Working Processing Module and an  $i$ th Failure Path that is connected to ~~a Processing~~ an  $(i + 1)$ th Processing Module that is logically adjacent to the  $i$ th Working Processing Module,

wherein the first Working Processing Module is the Working Processing Module that is adjacent to the Protection Processing Module, and the  $n$ th Working Processing Module is the Working Processing Module that is logically the farthest Processing Module from the Protection Processing Module.

6. (Currently Amended) The protection system of claim 5, wherein the Protection Bus ~~comprises~~ includes  $n-1$  Protection Bus Segments, and, for  $i = 1$ , ~~the  $i$ th~~ a first Protection Bus Segment connects ~~the  $i$ th~~ a first Working Processing Module to the Protection Processing Module, and for  $i = 2$  to  $n-1$ , the  $i$ th Protection Bus Segment connects the  $i$ th Working Processing Module to the  ~~$(i-1)$ th~~  $(i + 1)$ th Working Processing Module.

7. (Currently Amended) The protection system of claim 6, wherein, for  $i = 2$  to  $n$ , upon failure of the  $i$ th Working Processing Module, a connection is formed from the Protection Processing Module to ~~the  $i$ th~~  $(i - 1)$ th Failure Path via the  $(i - 1)$ th Protection Bus Segment.

8. (Currently Amended) The protection system of claim 7, wherein the connection formed from the Protection Processing Module to ~~the  $i$ th~~  $(i-1)$ th Failure Path further ~~comprises~~ includes a switching device associated with the  $(i-1)$ th Working Processing Module.

9. (Currently Amended) The protection system of claim 8, wherein the connection formed between the Protection Processing Module and ~~the  $i$ th~~  $(i-1)$ th Failure Path ~~comprises~~ includes each Protection Bus Segment logically between ~~the  $i$ th~~  $(i-1)$ th Failure Path and the Protection Processing Module.

10. (Currently Amended) The protection system of claim 7, wherein, for  $i = 1$ , upon failure of ~~the  $i$ th~~ the first Working Processing Module a connection is formed from the Protection Processing Module to the  ~~$i$ th Failure Path~~ Normal Path of the first Working Processing Module, and the connection does not ~~comprise~~ include a Protection Bus Segment associated with a Working Processing Module.

11. (Currently Amended) The protection system of claim 10, wherein the connection formed between the Protection Processing Module and the  ~~$i$ th Failure Path~~ Normal Path of the first Working Processing Module ~~comprises~~ includes a switching device associated with the Protection Processing Module.

12. (Currently Amended) The protection system of claim 2, wherein the plurality of Processing Modules ~~comprise~~ include at least one switching device for connecting the at least one Protection Bus Segment associated with each of the plurality of Processing Modules to at least one other Protection Bus Segment.

13. (Currently Amended) The protection system of claim 12, wherein the at least one switching device ~~comprises~~ includes at least one electromechanical switching device.

14. (Currently Amended) The protection system of claim 12, wherein the at least one switching device ~~comprises~~ includes at least one optical switching device.

15. (Currently Amended) The protection system of claim 2, further ~~comprising~~ comprising:

means for configuring the plurality of Processing Modules into a plurality of Protection Groups, each Protection Group ~~comprising~~ including at least one Working Processing Module and at least one Protection Processing Module.

16. (Currently Amended) The protection system of claim 15, wherein the configuring means ~~comprises~~ includes a Network Control Processing Module.

17. (Currently Amended) The protection system of claim 15, wherein the configuring means ~~comprises~~ includes at least one switching device.

18. (Currently Amended) The protection system of claim 15, wherein the plurality of Processing Modules are configured into a plurality of Protection Groups, each Protection Group ~~comprising~~ including at least one Working Processing Module and at least one Protection Processing Module.

19. (Currently Amended) The protection system of claim 15, wherein the configuring means ~~comprises~~ includes a Distributed Processor Array.

20. (Currently Amended) The protection system of claim 19, wherein the Distributed Processor Array ~~comprises~~ includes at least one of the plurality of Processing Modules.

21. (Original) The protection system of claim 2, wherein the plurality of Processing Modules are associated with a backplane.

22. (Currently Amended) The protection system of claim 21, wherein the backplane ~~comprises~~ includes an electronic circuit board.

23. (Currently Amended) The protection system of claim 21, wherein the backplane ~~comprises~~ includes a plurality of slots.

24. (Original) The protection system of claim 23, wherein at least one of the plurality of slots is specially adapted for use with a Network Control Processing Module.

25. (Currently Amended) The protection system of claim 24, wherein the Network Control Processing Module ~~comprises~~ includes a Distributed Processor Array.

26. (Currently Amended) The protection system of claim 1, wherein at least one of the plurality of Processing Modules ~~comprises~~ includes a Distributed Processor Array.

27. (Currently Amended) A protection system apparatus comprising:

~~(i)~~ a plurality of slots ~~comprising a first slot and a second slot~~ arranged in series, the plurality of slots including a first slot and a second slot, wherein the second slot is logically adjacent to the first slot;

~~(ii)~~ a signal path ~~comprising a~~ including a first Normal Path that is connected to the first slot, a second Normal Path connected to the second slot, a first Failure Path connecting the first slot to the second Normal Path of the second slot in order to provide a signal output for the second Normal Path upon a failure associated with the second slot, a second Failure Path operable to connect the second slot to a Normal Path of a third slot;

~~and a Failure Path that is connected to the second slot; and~~

~~(iii)~~ a Protection Bus ~~comprising~~ including at least one Protection Bus Segment for connecting two adjacent slots.

28. (Currently Amended) The apparatus of claim 27, wherein the plurality of slots further ~~comprise~~ include a third slot.

29. (Currently Amended) The apparatus of claim 28, wherein the first, ~~second~~ second, and third slots are configured to accommodate Processing Modules, and wherein, upon failure of a Processing Module in the first slot, a connection is formed through the Processing Module in the second slot to connect the Failure Path connected to the second slot to a Processing Module in the third slot.

30. (Original) The apparatus of claim 29, wherein the first slot is not logically adjacent to the third slot.

31. (Currently Amended) A protection system apparatus comprising

n slots; and

n-1 signal paths, wherein for each of  $i = 1$  to  $n-1$  signal paths, the  $i$ th signal path ~~comprises~~ includes an  $i$ th Normal Path that is connected to an  $i$ th slot, and an  $i$ th Failure Path that is connected ~~to a~~ to an  $(i + 1)$ th Normal Path of an  $(i + 1)$ th slot that is logically adjacent to the  $i$ th slot in order to provide a signal output for the  $(i + 1)$ th slot upon a failure associated with the  $(i + 1)$ th slot.

32. (Currently Amended) The apparatus of claim 31, ~~wherein the Protection Bus comprises n-2~~ further comprising:

a Protection Bus including n-1 Protection Bus Segments, and, for each of  $i = 1$  to ~~n-2~~ n-1 Protection Bus Segments, the  $i$ th Protection Bus Segment connects the  $i$ th slot to ~~a slot~~ an  $(i+1)$ th slot that is logically adjacent to the  $i$ th slot.

33. (Currently Amended) The apparatus of claim 32, wherein, for  $i = 2$  to  $n-1$ , upon failure of a Working Module in the  $i$ th slot, a connection is formed ~~from the~~ at the  $(i-1)$ th slot that is logically adjacent to the  ~~$(i-1)$ th~~  $i$ th slot ~~to the  $i$ th~~ between the  $(i-1)$ th Failure Path via the  $(i-1)$ th and the  $(i-2)$ th Protection Bus Segment.

34. (Currently Amended) The apparatus of claim 33, wherein the connection formed ~~from the slot at the  $i$ th slot~~ that is logically adjacent to the  $(i-1)$ th slot ~~to the  $i$ th~~ between the  $(i-1)$ th Failure Path and the  $(i-2)$ th Protection Bus Segment further ~~comprises~~ includes a switching device associated with a Working Processing Module in the  $(i-1)$ th slot.



35. (Currently Amended) A protection system comprising:

~~(i)~~ a plurality of Processing Modules arranged in ~~series~~ comprising series, the plurality of Processing Modules including at least one Protection Processing Module and at least two Working Processing Modules, ~~wherein at least one Working Processing Module is a protected Working Processing Module, and at least one~~ a first Working Processing Module is an adjacent Working Processing Module that is logically adjacent to ~~the protected~~ a second Working Processing Module in the direction of the Protection Processing Module;

~~(ii)~~ for each ~~protected~~ Working Processing Module, a signal path ~~comprising~~ includes a Normal Path ~~that is~~ connected to the ~~protected~~ first Working Processing Module, and a Failure Path ~~that is~~ connected to ~~at least one adjacent~~ between the first Working processing Module and a Normal Path of the second Working Processing Module, the Failure Path of the first Working processing Module operable to provide a signal output for the Normal Path of the second Working Processing Module upon a failure associated with the second Working processing Module; and

~~(iii)~~ a Protection Bus for connecting the Protection Processing Module through any intermediate Working processing Modules to the ~~at least one adjacent~~ failure Path of any Working Processing Module..

36. (Currently Amended) The protection system of claim 35, wherein each of the Working Processing Modules except for ~~the terminal~~ a terminating Working Processing Module is an adjacent Working Processing Module.

37. (Currently Amended) A protection system, comprising:  
a plurality of slots for accommodating a plurality of Processing Modules, each of the plurality of Processing Modules capable of performing a service;

a plurality of Protection Bus Segments, each Protection Bus Segment capable of forming a connection between two adjacent slots;

means for forming a Protection Group ~~comprising~~ including a plurality of Processing Modules capable of being interconnected in series by a plurality of the plurality of Protection Bus Segments, ~~where the plurality of Processing Modules is fewer than the plurality of slots;~~ and

means for designating a Protection Processing Module within the Protection Group, such that upon failure of a Processing Module in the Protection Group other than the Protection Processing Module, the Protection Processing Module becomes capable of providing a signal output to the slot associated with ~~performing the service provided by~~ the failed Processing Module over the Protection Bus Segments.

38. (Currently Amended) A protection system method, comprising:

~~(i)~~ providing at least one Protection Group, the at least one Protection Group including ~~comprising~~ a Protection Processing Module and at least one Working Processing Module ~~comprising a first Working Processing Module;~~

~~(ii)~~ providing a segmented Protection Bus operatively linking the Protection Processing Module and the at least one Working Processing Module; and

~~(iii)~~ providing a signal path operable to provide a signal output, the signal path including ~~comprising~~ a Normal Path that can be connected to the first Working Processing Module and a Failure Path that can be connected ~~to a~~ between the Normal Path of the first Working Processing Module and a Processing Module that is logically adjacent to the first Working Processing Module, wherein upon failure of the first Working Processing Module, a connection is formed from the Protection Processing Module to the Failure Path connected to the Processing Module that is logically adjacent to the first Working Processing Module in order to provide a signal output on the Normal Path of the first Working Processing Module.